CIRM Shared Research Laboratory Information Form – Part Two

Section A. Project Information

Project Title	UC Davis Translational Human Embryonic Stem Cell Shared Research Facility

Limited to 300 Characters

Project Start Date	Aug 1, 2007	Construction Start Date	Dec 13, 2007	Occupancy Date	Jul 24, 2008

Total Part Two Funds Requested for Shared Laboratory Space	$2,685,000
Total Part Two Funds Requested for Stem Cell Techniques Course	$ 590,000
Total Capital Funds Requested	$2,057,000

Note: All green fields are calculated values. Do not enter a value in the field.

Please indicate whether you propose to apply for funding of a Stem Cell Techniques Course along with the Shared Laboratory Space, or just the Shared Laboratory Space.

◯ Shared Research Laboratory only ◉ Shared Research Laboratory and Stem Cell Techniques Course

NOTE: Please be aware that any information you provide in this form will be made publically available.

Section A. 1. Program Director

Name	Prefix	First	Middle	Last	Suffix
	Dr.	Alice	F.	Tarantal	

Email (office)	aftarantal@primate.ucdavis.edu	This email address identifies you to CIRM. Please use this email address for all correspondence with CIRM.
Application Number	CL1-00504-1	This field should fill automatically, based on the email address. If not, enter the number you received via email from CIRM, in the form "XX9-99999-9", where "X" is a letter, and "9" is a digit.

Section A. 2. Facilities Contact

Name	Prefix	First	Middle	Last	Suffix
	Mr.	Mark	S.	Romney	

Institution	University of California, Davis	If your institution is not listed, please identify the name of the institution here.
Other Institution		
Position Title	Facilities Planner	
Department	UC Davis Health System	
Address	FSSB, 4800 2nd Avenue, Suite 3010	
	UC Davis Medical Center	

City	Sacramento			CA	Zip Code 95817
Phone Number	(916) 734-6574	Ext		Fax Number	(916) 734-6569
Email (office)	msromney@ucdmc.ucdavis.edu	This email address identifies you to CIRM. Please use this email address for all correspondence with CIRM.			

(Revised 03/07/2007)

Section A. 3. Public Abstract

See Appendix A.

Section A. 4. Statement of Benefit to California

See Appendix A.

Section B. Laboratory Renovation Plan

Project Manager	Vincent Allan Palmer		Construction Supervisor	Mark Romney
Title	Project Manager		Title	Facilities Planner
Company/Institution	UC Davis		Company/Institution	UC Davis

Describe plans for development/renovation of the shared laboratory space including fixed equipment costs. Include a description of the current space and how it will be renovated and reconfigured to form the laboratory. Include as attachments one 11x17 page of the current floor plan space and one 11x17 page of proposed floor plan of the renovated space. Describe all renovations that will be done. Describe how the project will be managed and tracked, as well as how change orders will be handled. For laboratories that are proposed to be located in leased space, provide information regarding the institution's long-term access to the leased space. Describe plans and schedule for all phases of development including design, construction, and installation of equipment leading to a functional laboratory. Give a proposed contingency plan in case of cost overruns. Any additional costs due to budget overruns will be the responsibility of the grant recipient. (narrative limited to 3 pages)

1. Plans for Space Development

The UC Davis Translational Human Embryonic Stem Cell Shared Research Facility will include 2,257 assignable square feet (ASF) with defined laboratory areas that will ensure investigators can effectively conduct their research. The facility will include a cost- and time-efficient plan for space development, and is designed to be self-contained with essential space and equipment that will include (1) three fully equipped cell culture laboratories (with biosafety cabinets, incubators, microscopes, and other essential equipment) to ensure efficient flow of activities and the ability for multiple investigators to work in the facility at the same time; one laboratory will be dedicated at specific times during the calendar year for the techniques course, (2) flow cytometry and cell sorting, (3) quantitative real-time RT-PCR, (4) histology and immunohistochemical capabilities, (5) essential controlled-rate cryopreservation and cell storage, and (6) an infrastructure with experienced personnel to ensure efficient operation, to provide services, and to ensure the necessary training and oversight. The facility will encourage collaborations throughout California; foster translational, multidisciplinary research; provide necessary supervision; and promote cost effectiveness through a variety of services and opportunities. To facilitate investigator interactions, a conference room will be available for group meetings, presentations, the techniques course, and to discuss data, with shared office areas for investigators with internet access and computer workstations (see floor plan).

The UC Davis Shared Research Facility will be located off main campus in close proximity to nonhuman primates. This is an ideal location because expertise to develop and oversee such a facility is in place, necessary space and essential security is available, and this location will provide a unique opportunity for investigators to work with personnel experienced in the conduct of studies with nonhuman primates. Many investigators new to human embryonic stem cell research will benefit greatly by the presence of this facility, while those experienced in human embryonic stem cell research will have new opportunities to facilitate their research in an environment that will not be restricted by federal limitations, and within a culture of sharing and collaboration. The facility will be accessible to qualified investigators from the applicant institution, UC Merced, and other California institutions such as Childrens Hospital Los Angeles, the City of Hope National Medical Center, Stanford University, and others. The proposed facility will be comprised of permanent modular space that will be built offsite and transported to the site for final assembly. All walls, doors, windows, finishes, laboratory casework and benches, mechanical systems, electrical systems, plumbing/piping systems, and fume hood will be included in the assembly. All necessary utilities including water, electrical, natural gas, telephone, and data connections will be provided from existing campus resources located adjacent to the proposed site. The facility is designed with longevity and durability in mind, and to efficiently function for many years in the future for the stated purpose.

a. Facility Construction - Walls will be constructed with metal stud framing with gypsum wallboard finish in the interior areas and metal panels on the exterior areas. Doors will have metal frames and will be of insulated metal construction for exterior doors or solid core wood construction for interior doors with vision panels. Double glazed exterior windows will be placed in all exterior rooms to provide natural lighting with window coverings to allow for lighting control for light-sensitive procedures. Interior wall and ceiling finishes will be painted in the laboratory areas and suspended acoustical tile in the conference/lecture room and shared office areas. All laboratory, support, anteroom, corridor, and open space floor finishes will be seamless vinyl with a 4" minimum covered base. Laboratory casework including benches, computer counters, base cabinets, and high cabinets will be of modular construction with chemical resistant epoxy countertops. The laboratory casework will be of the quality necessary to achieve several important goals such as to provide adaptable work surface heights and workstation configurations to allow for varying accessibility needs of individuals with disabilities, and for specialized equipment and adaptability for future equipment needs. A fume hood will be included in the molecular core laboratory and will be directly exhausted to the exterior and

Section B -- 1. Laboratory Renovation Plan (continued)

according to established requirements. Concrete paved walkways will be installed for the main (south) and secondary entries (north). Asphalt paving will be installed at the service side (west) to facilitate the transport of vital gases (CO2 for incubators, liquid nitrogen for cell cryopreservation and storage). Protective metal rain canopies will be placed at each of the exterior doors along with matching metal canopies above each window area capable of shading the glazing during peak sunlight hours.
b. Electrical System - The normal power electrical system will be designed to support all equipment listed below with moderate expansion capabilities to support future equipment needs should such need arise. A facility-wide UPS system will be capable of supporting the power requirements well beyond the time necessary until the emergency generator is activated, while providing a higher quality clean power source for the research equipment. An emergency generator will be dedicated to the facility for back-up power for critical life safety and laboratory systems such as the HVAC components, biosafety cabinets, fume hood exhausts, incubators, freezers, speciality gas manifolds, door interlocks, and emergency lighting. Lighting will be recessed fluorescent and can be readily cleaned within all areas of the facility, and a dimmable incandescent lighting arrangement will be provided in the flow cytometry/cell sorting laboratory. The gas cylinder storage area on the west side of the facility will also include a rack for the tanks and the storage area will have fluorescent lighting. External site lighting will provide exterior site/ security lighting for facility access and surrounding the perimeter.
c. Mechanical System - The laboratories, corridors, and other areas will be conditioned by a constant volume, once through a system capable of a minimum of 6 air changes per hour filtered to a minimum of 95% with the exception of the cell culture laboratories which will be HEPA filtered to a minimum of 99.9%. Air differential requirements will be with the cell culture laboratories positive to the corridor with the corridor positive to the other laboratories. The conference area, shared offices, and open space will be on a recirculating system. The ante rooms will also be negative to the laboratory hallways and shared office areas. Dedicated temperature control (cooling and heating) will be provided.
d. Plumbing - Adequate plumbing will be provided for hot and cold water to each sink along with sanitary sewer. An independent de-ionized water unit will be available for special water needs as a component of the water system (see equipment). Emergency showers will be included in the hallway along with emergency eye wash stations at the laboratory sinks.
e. Fire - All areas within the facility will be fully protected with a water-based automatic fire sprinkler system designed to comply with NFPA 13-1999 with flow and tamper switches included as required by the State of California Fire Marshal.
f. Specialty Piping - Piping systems will be provided that are adequate to deliver the necessary CO2 to the incubators and liquid nitrogen to the storage cryotanks (automatic fill) and the controlled rate cryopreservation unit. Tanks will be stored in an enclosed (secured) room on the west side of the facility; this will provide easy access and eliminate the need for delivery personnel to enter the facility reducing the potential for contaminants to enter the laboratory areas. Vacuum will also be provided to the fume hood and biosafety cabinets.
g. Telephone/Data - Telephone and data outlets will be installed in each laboratory, conference/lecture area, and shared office areas. Each room will be supplied with two boxes, and each with two telephone and two date connections. These will be served via CAT-5E cabling from existing sources.
h. Control - A low oxygen monitoring and alarm system will be included in the cryopreservation/cell storage area.
i. Security - Both exterior doors and the interior door into the anteroom will be secured with a card reader access system. Visual monitoring will be provided at each interior door by CCTY via the central facility control panel. The irradiator room will include both card access on the door as well as an internal stand alone alarm. No key access will be available to the room (access by cardkey and an internal keypad). All laboratory areas will be secured by personal access codes for authorized users. The entire grounds surrounding the proposed site has restricted access and is monitored 24/7 by security personnel.
j. Energy Conservation - The building energy consumption shall exceed California State Title 24 Energy Requirements by a minimum of 20%.
k. Accessibility - The main entry into the facility will be from the south side from the quad area with an alternative exit/entry on the north side. All door hardware, floor finishes, and room clearances shall comply with California State Title 24 Accessibility Requirements along with a recognized percentage of the laboratory casework. The laboratory casework (benches and work areas) plan will identify the minimum accessible work area requirements; the casework can be adjusted to accommodate accessibility. All of the office and conference room furnishings will also comply with accessibility requirements.

2. Managing and Tracking Project
The UC Davis Office of Architects and Engineers (A&E) will manage and track this project. A&E is responsible for the administration of the campus capital program. Under the direction of the Campus Architect, each capital project is assigned to one of 20 highly experienced and licensed architects and engineers serving as project managers. The A&E project manager has overall responsibility for the budget, schedule, and administration for each assigned project, from the start of design to the finish of construction. The project managers oversee the work of all outside consultants and contractors. The project managers are assisted by a highly integrated team of professional support staff for building inspection, engineering review, contracts

Section B -- 1. Laboratory Renovation Plan (continued)

preparation, accounting, clerical support, and cost estimations. A&E is currently administering a capital program with over 100 projects in programming, design, and construction with a total project value of over $1 billion. In the past 7 years, A&E has bid $650 million in construction projects, averaging 1% under the approved budget. A&E will provide oversight for all design documentation, construction documentation, construction inspection, construction coordination, price solicitation, contract development, and contract award. Change orders will be managed through the designated Project Manager (see Section B.2) and funded through the reserves set aside in the contingency costs. This project will be performed in accordance with UC Regents policies, procedures, and regulations. UC Davis has historically maintained a construction change order rate under 5% for new construction. With the design concept for this project the 8.5% contingency proposed is more than adequate.

3. Plans and Schedules for all Phases (Design, Construction, Installation)
a. Design (Planning and Bidding)
• Planning - A&E will begin the formal development of Facility Plans and Specifications (preliminary plans and working drawings) upon notice of grant award (if funded, presumed July 31, 2007). A request for planning funds will be immediately submitted (August 3, 2007). Working drawings are expected to be submitted for approval November 15, 2007. During the final design the proposed layout will be evaluated and the laboratory space maximized in relation to support space.
• Bidding - Once approval is obtained, A&E will publicly advertise for bid the Facility Plans and Specifications (working drawings) to various vendors and contractors capable of the manufacture of modular structures into transportable modules for transport to the project site, final assembly, and commissioning. Considerable information has been obtained from several vendors, including those within California, and has focused on those that can deliver the design elements, have a proven track record with laboratory space development, and can provide the necessary high quality space according to design specifications. Per UC Regents policy the construction and bid documents require that the vendors and contractors perform the work in accordance with local prevailing wage. The bidding period is expected to result in contract award by December 13, 2007.

b. Construction and Installation
Construction activities will begin when the contract is awarded (December 13, 2007). Equipment purchases (e.g., irradiator, flow cytometer/cell sorter) will be initiated early which will provide sufficient time for processing through campus and allow the vendor time necessary to ensure delivery will be in advance of occupancy of the facility. The modular facility vendor will provide documentation for the site preparation work (placement of the pad including grading and foundation work) prior to the arrival of the modules. Upon UC Davis and CIRM approvals the vendor will begin the manufacture of the modular units for transport. This pre-manufacture and manufacturing period is expected to take approximately 20 weeks. During this period the site work is also expected to be bid, awarded, and completed. With delivery of the modular components the vendor will perform final assembly and commissioning work in approximately 9 weeks. Upon final inspection, the remaining equipment will be installed and certified. Occupancy is anticipated by July 24, 2008. The proposed timeline was developed to be realistic and achievable.

4. Contingency Plan
UC Davis is experienced in the planning and construction of modular structures, thus there is a very high level of confidence that the presented financial plan can be achieved as proposed and without additional costs. The plan for the facility has been a team effort (see next section) and is based on a paradigm that has worked effectively for other similar space needs at the proposed site. For example, two successful projects involving modular space development emphasize the cost, and importantly, time efficiency of this approach. These projects required aggressive schedules. One took the project from 75% design documents to construction completion within 5 months. This was largely accomplished because space development occurred offsite simultaneously with site improvements. A similar space development plan was chosen because of the need to establish a shared facility with the necessary space, equipment, and resources to conduct high quality human embryonic stem cell research that is separate from current NIH-funded research, and can be occupied within a short time frame. This modular concept was determined to be the most effective method to deliver the necessary research space to design specifications within a reasonable and cost-effective timeline, and without the delays that can occur with renovations and extreme weather conditions. Because of the steel frame construction and the integrity of the components this facility can be maintained for an indefinite period of time. Although not anticipated, should it be necessary to conserve costs, the potential for consolidating support space will be considered. Re-evaluation could also involve additional value engineering and/or selection and execution of bid alternates. In all cases, final plans will ensure that the laboratory space is maximized. UC Davis is very enthusiastic about the development of this facility which is evident by an institutional match well over the 20% required ($800,000 matching funds); every effort will be made to ensure that the project proceeds as planned

Section B. 1. Schedule/Timeline and Drawdown of Funds Table

Provide a realistic schedule and drawdown of funds for completing each activity/milestone, as indicated below.

#	Activity/Milestone	Start Date	Completion or Milestone Date	Amount of CIRM funds to be drawn
1	Grant Award (estimate)		Jul 31, 2007	
2	Request for Planning Funds (10% of Construction Costs)		Aug 3, 2007	$100,000
3	Prepare Preliminary Plans	Aug 31, 2007	Sept 10, 2007	
4	Approval of PPs		Oct 1, 2007	
5	Prepare Working Drawings	Oct 2, 2007	Oct 15, 2007	
6	Approval of WDs		Nov 5, 2007	
7	Request Construction Contract funds (80% of Construction Costs)		Oct 16, 2007	$800,000
8	Advertise for Construction Contract	Nov 6, 2007	Nov 26, 2007	
9	Award Construction Contract		Dec 13, 2007	
10	Construction Activities	Dec 13, 2007	Jul 24, 2008	
11	Completion of Equipment Purchases		Mar 21, 2008	
12	Request Equipment Purchase funds		Mar 24, 2008	1,000,000
13	Beneficial Occupancy		Jul 24, 2008	
14	Notice of Completion		Jul 24, 2008	
15	Request Construction Completion Amount (10% of Construction Funding)		Jul 24, 2008	$100,000

"Preliminary Plans" (PPs) represent approximately 35 percent of the design effort, or may be considered the product of completing the "Design Development" (DDs) phase of architectural work.

"Working Drawings" (WDs) represent drawings and specifications from which a contractor may determine the full extent of work contemplated in the project for purposes of submitting a bid; may be referred to as completion of "Construction Documents" (CDs) phase of architectural work.

Section B. 2. Budget

Provide a complete budget for the renovation that includes construction costs, design fees, administration of the project, other costs (i.e. installation of equipment) and a construction contingency (limited to 7-10% of the construction budget). Identify the amount of CIRM funds requested and the matching funds (construction requires 20% matching funds). Provide a complete budget for movable equipment (equipment requires 20% matching funds). (narrative limited to 3 pages)

(Note: An Excel spreadsheet can be attached as long as the total submission for this Section is limited to 3 pages)

1. Space Development

UC Davis proposes a plan for space development that integrates efficient operation of the shared research facility with a techniques course (see Section C), and using a team approach. This integration of space is reflected in the descriptions provided in Sections B and C and the overall budgets. A working group consisting of the Program Director and representatives from A&E (Gary Dahl, V. Allan Palmer), the Office of Resource Management and Planning (Paul Schwartz), and the Office of Facilities Planning (Mark Romney) (with additional ad hoc personnel as required) has been instrumental in the planning of this shared research facility. This working group will continue to remain involved and meet regularly throughout the final planning, design, and construction phases until the facility is ready for occupancy. The Office of Resource Management and Planning provides on-going advice and strategic recommendations, thus the insight of Mr. Schwartz in the planning and implementation of this project is invaluable. It is important to note that the time Mr. Schwartz has spent in the working group meetings and in discussions with the Program Director and the time he will spend on future planning and implementation of this project is supported by the Provost's Office. Mr. Schwartz will be preparing the project planning guide with the assistance of this working group once Part Two of this application is submitted. The School of Medicine is providing support for Mr. Romney's time as a member of the team and for his future assistance to the Program Director and Project Manager as the Construction Supervisor. As noted in the prior section, the A&E Project Manager (Mr. Palmer) will have overall responsibility for the budget, schedule, and administration for the project, from design to the finish of construction with the assistance of a highly integrated team of professional support staff. As an example, formal questions by the selected contractor/vendor will be submitted via a formal electronic request for information (RFI) system tracking clarifications on any issue that may arise. If the RFI is expected to result in a contract cost change (increase or credit), Mr. Palmer will request a change order proposal from the vendor for review. All change orders will be reviewed and approved by the project team prior to issuance to the vendor. The overall project schedule will be addressed at regular meetings of the Project Manager, Construction Supervisor, and Program Director. The contractors/ vendors will also review the scheduled activities for the upcoming two-week period with this group to ensure the project remains on schedule. As the Construction Supervisor, Mr. Romney will be an ongoing liason between all working group members and with personnel at the site in relation to facility issues. Mr. Romney has extensive experience in this role at the Federal (NIH), State (DSA), and local agency levels. Thus, in addition to the $800,000 matching funds, institutional support is also provided for the ongoing inclusion of these crucial individuals in the team planning and implementation of this facility. An Environmental Impact Report that included this proposed facility has been completed and publicly reviewed with no comments related to this project, thus this necessary requirement for the project has been met.

The following costs are included in Section B.3. Budget Summary Table:

a. Construction Costs (Total construction costs $1,275,000; institutional match $416,000)
- Site preparation including the rough grading and foundation work necessary to support the modular components ($36,000).
- The modular facility which includes walls, doors, fire sprinkler system, cabinetry, workstations, laboratory benches, and associated elements, finishes, and fume hood ($1,054,000).
- Security system for the facility including door entry access, interior alarms, security for the irradiator ($25,000).
- Telephone and data systems for computer and internet access including connections and distributions to the laboratories and other support areas ($24,000).
- Utility connections such as electrical, water, sanitary, storm drain, natural gas, and a dedicated backup generator to support the facility ($65,000).
- Paving which includes asphalt/concrete site paving for entrances and walkways ($33,000).
- Other miscellaneous construction costs which includes items such as signage, keying, construction inspection, material testing, reproduction, and insurance ($38,000).

b. Design Fees (Total fees $51,000; institutional match $17,000)
- A&E design fees include drafting and finalizing plans and specifications, and site design and implementation ($47,000).
- Surveys and investigations which includes site survey and soils investigation ($4,000).

c. Administrative Costs (Total costs $50,000; institutional match $16,000)

Section B. 2. Budget (continued)

• Project administration includes project management, bid administration, contract administration, project accounting, and submittal review.

d. Construction Contingency (Total contingency $109,000; institutional match $36,000)
• Approximately 8.5% of the construction cost has been included as contingency costs (see prior section).

2. CIRM Funds Requested and Matching Funds
The total institutional matching funds committed for the facility is $800,000 (see Sections B and C). For the shared research facility total costs shown in Section B.3. Budget Summary Table of $1,485,000 are included, with $1,000,000 requested from CIRM and $485,000 provided by matching funds. For movable equipment, total equipment costs of $1,200,000 are included with $1,000,000 requested from CIRM and $200,000 provided by matching funds. The balance of the matching funds are included in Section C.

3. Movable Equipment
The shared research facility will include core laboratory areas that will provide essential equipment to address investigator needs. The floor plan is designed with a natural flow for the activities that will take place, and includes areas that are dedicated to ensure sterility, optimal conditions for investigators working simultaneously in the facility, and with air flow and overall design elements that will avoid contamination and the potential for cross-contamination. The three cell culture laboratories will be HEPA filtered, positive to the corridor, and fully equipped with biosafety cabinets, incubators, microscopes, and other essential equipment and supplies as described, with one laboratory dedicated four select times during the calendar year for the techniques course (cell culture laboratory #3). Space has also been designated for flow cytometry and cell sorting, molecular and histology core areas, and a cell cryopreservation and cell storage area. A total of $1,200,000 is included for equipment with 20% matching funds ($200,000) from the institution (see letter from Dr. Barry Klein). Price quotes have been obtained for equipment items with known quality and reliability, that will be honored until the proposed time of purchase, and with California vendors in mind. All costs include extended warranties and service contracts to cover the three-year period of the proposed award and as a one-time cost. All costs include tax, shipping, and any installation fees necessary. Future years (beyond the 3 years covered by the proposed award) will have costs built into the recharge rates for use and services, and this will provide the necessary support to ensure equipment is properly maintained and is operational. A property management system is in place to monitor and track all equipment with record keeping that provides equipment identification, and procedures to safeguard and prevent against loss, damage, and theft. Equipment maintenance by the staff has been described in Part One of the application and this plan will ensure equipment is maintained in good working order, and continued coverage provided through service contracts that will be included in future recharge rates developed for the facility (see Section B.4.).

Equipment costs for the shared research facility include the following:
• Four 4-foot Class II Baker SterilGARD III biosafety cabinets (for cell culture laboratories and the molecular core laboratory) - these units have advanced ergonomics and meet the essential biosafety and design elements required including double wall all metal negative pressure plenums which completely surround the work area to prevent contamination, and high capacity, low resistance supply and exhaust HEPA filters that last an average of 7-10 years. With the necessary maintenance and certification, these units have an approximate 10 year lifespan ($36,000).
• Six double-stacked Heraeus HERAcell CO2 incubators (total 12 incubators) - providing these essential incubators for the cells will ensure sufficient space for investigators to conduct their studies without concerns about the potential for cross-contamination from other investigators cultures. One will be dedicated for facility services in cell culture laboratory #3. These incubators are purchased as a double-decker unit to conserve space, and have a minimum 15 year lifespan. The costs represent 6 double units with an extended warranty and service contract as a one-time cost ($80,530).
• Three Zeiss Axio Observer inverted microscopes with cameras (one per cell culture laboratory) - these microscopes are cost efficient and have a fully integrated research platform for cell observation, manipulation, and analysis. They have a minimum 10 year lifespan. Microscopes will be purchased with an extended warranty ($88,320).
• One Zeiss Axio Imager with brightfield digital microscopy and epi-fluorescence - this system will be purchased for the morphology core laboratory and has enhanced optics and is designed for maximum stability, is vibration-free, and with an ergonomical working environment. This microscope will be used for identifying fine cellular structures and molecular signals using immunochemical and nucleic acid staining, and to capture images. This system has a minimum 10 year lifespan and will be purchased with an extended warranty as a one-time cost ($23,700).

Section B. 2. Budget (continued)

• BD FACSAria with four lasers and computer workstation (BD Biosciences, San Jose, CA) - this flow cytometer is user friendly, enabling users to flow up to 12 colors and with greater dimensions to multi-color analysis compared to regular 4-color systems. This system also delivers easy-to-use high-speed sorting with superior fluorescence sensitivity. Cost for this system includes an extended service contract for the three years of the award. Lifespan is approximately 8-12 years ($598,140).
• ABI 7500 Real-Time TaqMan PCR system with workstation (Applied Biosystems, Foster City, CA) - this system can detect 5 colors (exceptional capacity for multiplexing) and is easy to calibrate without adding extra filter sets. Typical lifespan is approximately 10 years ($60,680).
• Two PCR enclosures - these units will be used to prepare reagents for PCR and prevent contamination, with location in the PCR processing ("dirty") room and the molecular core. They are equipped with a UV light for decontamination purposes and have an extensive lifespan ($6,060).
• CryoMed controlled rate cryopreservation unit with racks and printer - this system will ensure appropriate conditions for cell cryopreservation and provide a high percentage of viable cells when thawed using a clinical protocol for consistent cell cryopreservation. The cryopreservation protocols can be modified to tailor specific needs. Purchase cost includes an extended warranty; these units have a minimum 10-15 year lifespan ($12,230).
• Two CryoPlus 2 storage systems with inventory racks and monitor/alarms - these systems have auto-filling capabilities with microprocessor controls and LEDs that display liquid nitrogen levels and high/low setpoints. Costs for these units include an extended warranty; these units have a minimum 10-15 year lifespan ($37,805).
• Milli-Q water system - this system produces pyrogen nuclease free ultrapure water which is particularly important for molecular biology. Costs include an extended warranty, installation, and service contract; this unit has a minimum 10 year lifespan ($15,070).
• Three Sorvall refrigerated centrifuges (one/cell culture laboratory) - these units are essential for processing cells. Costs include an extended warranty and service contract; they have an approximate 20 year lifespan ($24,770).
• Three refrigerated microcentrifuges - these units are necessary for processing small samples and pelleting cells, and processing RNA and DNA. Costs include an extended warranty and service contract; they have a minimum 10 year lifespan ($15,100).
• BioRad spectrophotometer (BioRad, Hercules, CA) - this unit will be used to quantitate protein, RNA, and DNA. Costs for this unit includes a service agreement; these units have an extensive lifespan ($5,330).
• Leica cryostat for frozen sections - this unit will primarily be used to section embryoid bodies placed in OCT embedding compound which is best for preserving immunogens. The unit is equipped with a motorized system and is user friendly, and with the service contract will have an approximate 10-15 year lifespan ($22,725).
• Zylux Sirius-0 luminometer - for mycoplasma screening to ensure cells are not contaminated with mycoplasma, and to measure luciferase activity in transduced cells. Costs include extended warranty; these units have an extensive lifespan ($7,050).
• Cesium irradiator 143-45 for preparation of cell feeders for the human embryonic stem cells (JL Shepherd, San Fernando, CA) - this unit provides consistent dose with automatic sample return, built-in safety features, and emits very low external radiation levels. This unit is very safe to use and will be located in a confined, secure area. Costs include installation and a service contract. These units have an approximate 30 year lifespan ($153,270).
• One -80°C freezer with racks - for storage of samples that do not require storage in liquid nitrogen. Costs include an extended warranty; these freezers can remain operational for 20+ years ($13,220).

Section B. 3. Budget Summary Table

Complete the budget summary for the use of CIRM funds.
Note: All colored fields contain calculated data. Please do not enter anything in those fields.

Other Project Costs				
Budget Category		**Total Budget**	**CIRM Grant Funds**	**Institutional Match**
Construction Contract Costs		$1,237,000	$ 833,000	$ 404,000
Other Construction Costs (institutional)		$ 38,000	$ 26,000	$ 12,000
Subtotal Construction		$1,275,000	$ 859,000	$ 416,000
Design Fees		$ 51,000	$ 34,000	$ 17,000
Administrative Costs		$ 50,000	$ 34,000	$ 16,000
Construction Contingency		$ 109,000	$ 73,000	$ 36,000
Total Construction		$1,485,000	$1,000,000	$ 485,000
Movable Equipment		$1,200,000	$1,000,000	$ 200,000
Total Budget		$2,685,000	$2,000,000	$ 685,000
Gross Square Feet	2520	$ 589.29	$ 396.83	Const Costs/GSF
Assignable Square Feet	2257	$ 657.95	$ 443.07	Const Costs/ASF

Section B. 4. Institutional Commitment

Provide a detailed description of the amount and source of matching funding for each request that requires matching funds. The requirement of matching funds can be satisfied if the institution can document funds, excluding other grant funds, committed to similar projects (i.e., renovation of lab space and equipment purchase) after January 1, 2005. Detail the use of the space after the three year period is completed. (narrative limited to 2 pages)

1. Matching Funds

Institutional commitment from the UC Davis Provost and Executive Vice Chancellor Virginia Hinshaw ($600,000) and the Vice Chancellor for Research, Dr. Barry Klein ($200,000) for a total of $800,000 institutional matching funds has been provided for this project. Please see attached letter from Dr. Barry Klein addressing the institutional commitment. UC Davis is fully committed to support the proposed plan as outlined in this application, and provide the necessary funds and resources for planning, implementation, and future use of the facility. The support for personnel in the working group for the design, planning, and implementation indicates additional institutional support for this project.

2. Use of Space Post-CIRM Support

The facility will continue to be used in the manner described and for the intended purpose beyond the three-year period of proposed CIRM support. Our objective is to develop, implement, and sustain the UC Davis Translational Human Embryonic Stem Cell Shared Research Facility for the campus community and qualified California investigators to use as described in Part One of this application. UC Davis is committed to supporting stem cell research efforts and the shared research facility is an integral and vital component of these efforts. In the School of Medicine, for example, the strategic plan highlights stem cells and regenerative medicine as a major focus area, and extensive financial commitments have been made including the development of a state-of-the-art FDA-approved Good Manufacturing Practice (GMP) laboratory for human-related protocols. UC Davis provides an exceptionally rich environment for multidisciplinary, translational research in areas such as stem cells and regenerative medicine (see Part One), and these research efforts are complemented by the UC Davis Clinical and Translational Science Center (CTSC). The CTSC is focused on enhancing the study of human health and disease, and bringing new treatments more rapidly to patients and communities. The CTSC and the campus collaborative culture also links many related research programs in the Schools of Medicine and Veterinary Medicine with those in the Colleges of Biological Sciences, Engineering, and Agricultural and Environmental Sciences, and with organized research units such as the Primate Center.

In order for the shared research facility to move towards self-sufficiency, four components will be considered as rates are developed: labor, supplies, equipment maintenance and usage, and administration (based upon labor and supplies required for billing and accounting functions). The objective is to develop a sustainable plan to ensure the longevity and high quality function of the facility, and to meet investigator needs. We will use existing paradigms that have been successful at UC Davis to ensure this plan will be achieved. The Program Director has a wealth of relevant and parallel experiences and there are established institutional support mechanisms to ensure this facility and the infrastructure will be available for investigators in the future. The effectiveness of facility functions will be assessed regularly by the Oversight Committee as described in Part One of the application. The Oversight Committee will be evaluating the specific service(s) to be provided, users of the service, and costs per service. Detailed reports will be reviewed monthly to assess cost recovery, and to ensure that support services are available to all approved California investigators and utilized by a reasonable number of investigators. Recharge rates established for each of the services will be developed in compliance with UC Policy and Procedure, and reviewed annually. The rates will be based on the actual cost of supplies and labor based on time-in-motion studies. The Office of Resource Management and Planning provides all the essential reference materials and forms necessary online (www.ormp.ucdavis.edu/rates/index.html). Personnel at the proposed facility site have extensive experience in rate development for various service activities, and the process for establishing and implementing these rates and recharges. The Oversight Committee will also be responsible for evaluating the progress of the shared research facility, the annual budget, ensuring the facility is effectively planning for self-sustainability, any additional space needs that may be required, and identifying ways to foster collaborations with other CIRM-supported facilities that may enhance cost-effectiveness. With the current modular plan and the additional space available at the site, expansion will also be possible. The UC Davis Human Embryonic Stem Cell Shared Research Facility will serve the state and its citizens by providing unparalleled opportunities to investigators, and establish a model for the manner in which investigators across California can work together to advance cellular therapies for the treatment of human disease.

Section C. Stem Cell Techniques Course (if applicable)

Based on the information provided in Part One of the application describing the course, include a justification of the additional space required and additional equipment requested, if any. Include additional square footage and provide as an attachment one 11x17 page of the proposed floor plan of the renovated space. (narrative limited to 1 page)

The techniques course will aid California investigators, students, fellows, and staff to overcome hurdles in initiating studies with human embryonic stem cells, and provide the essential training necessary to ensure their success. The cells are difficult to grow and specialized expertise is required. The program will be focused on the core elements, and include practical 'hands-on' experiences, demonstrations, and didactic presentations over an intensive two-day period. To maximize the training experiences, audiovisual demonstrations will also be provided and all lunch breaks in the conference/lecture room will be "working lunches" to ensure essential material is addressed. Trainees will be provided a training binder with training materials and protocols, a list of sources for supplies and reagents, and other relevant training documents, as well as guidelines for working in the shared research facility. Lectures will be given at the beginning and end of each day of the hands-on training sessions and demonstrations, which will be presented by course instructors and visiting faculty. The use of audiovisual materials will be incorporated for some procedures in the didactic presentations due to time constraints. Prior to entering the laboratory areas all trainees will be required to participate in the facility biosafety training, which will also include a review of facility rules and regulations. In the laboratories all trainees will first view the procedures, then advance to the hands-on experiences under continuous supervision by the techniques course faculty and staff.

One of the cell culture laboratories (cell culture laboratory #3) will be dedicated to the techniques course four times during the calendar year and, thus, will not interfere with the needs of investigators with ongoing projects. This laboratory will be used to demonstrate techniques and procedures such as reagent preparation, general cell culture techniques, assessments of cell morphology, cell passaging, and formation of embryoid bodies. The other facility areas will also be used for demonstrations and other related hands-on experiences (flow cytometry, molecular core-PCR, histology core-immunohistochemistry, cell cryopreservation). In addition, essential preparation is required for the course each of the four times during the calendar year it will be offered (proposed October, January, March, August). Included is the preparation of cells (feeders and embryonic stem cells) in sufficient quantities and of the necessary quality by the staff, which will encompass approximately 3-4 weeks prior to the course. The course will also introduce trainees to the shared research facility and provide information on how they may utilize the facility in the future. All trainees will have the opportunity to submit an application for 'start-up' funds (e.g., technical support for a defined period at no cost to assist with initiating experiments). The techniques course is viewed as an integral component of and part of the vision for the shared research facility, thus we have developed a cost-efficient plan without additional square footage. Thus, the techniques course sections include a part of the cost of the facility, and the timeline/ schedule shown in Section C.1. is identical to the timeline/schedule shown in Section B.1. Section C.2. Budget and Section C.3. Budget Summary Table reflects these partial costs, with two equipment items (biosafety cabinet, microscope) included.

Limit narrative to visible field area.

Section C. 1. Schedule and Drawdown of Funds Table (if applicable)

Provide a realistic schedule and drawdown of funds for completing each activity/milestone, as indicated below.

#	Activity/Milestone	Start Date	Completion or Milestone Date	Amount of CIRM funds to be drawn
1	Grant Award (estimate)		Jul 31, 2007	
2	Request for Planning Funds (10% of Construction Costs)		Aug 3, 2007	$ 45,700
3	Prepare Preliminary Plans	Aug 31, 2007	Sept 10, 2007	
4	Approval of PPs		Oct 1, 2007	
5	Prepare Working Drawings	Oct 2, 2007	Oct 15, 2007	
6	Approval of WDs		Nov 5, 2007	
7	Request Construction Contract funds (80% of Construction Costs)		Oct 16, 2007	$365,600
8	Advertise for Construction Contract	Nov 6, 2007	Nov 26, 2007	
9	Award Construction Contract		Dec 13, 2007	
10	Construction Activities	Dec 13, 2007	Jul 24, 2008	
11	Completion of Additional Equipment Purchases		Mar 21, 2008	
12	Request Additional Equipment Purchase funds		Mar 24, 2008	$ 14,400
13	Beneficial Occupancy		Jul 24, 2008	
14	Notice of Completion		Jul 24, 2008	
15	Request Construction Completion Amount (10% of Construction Funding)		Jul 24, 2008	$ 45,700

"Preliminary Plans" (PPs) represent approximately 35 percent of the design effort, or may be considered the product of completing the "Design Development" (DDs) phase of architectural work.

"Working Drawings" (WDs) represent drawings and specifications from whicha contractor may determine the full extent of work contemplated in the project for purposes of submitting a bid; may be referred to as completion of "Construction Documents" (CDs) phase of architectural work.

"Additional Equipment" represents equipment to be used for the Stem Cell Techniques Course.

Section C. 2. Budget (if applicable)

Provide a complete budget for the additional renovation that includes construction costs, design fees, administration of the project, other costs (i.e. installation of equipment) and a construction contingency (limited to 7-10% of the construction budget). Identify the amount of CIRM funds requested and the matching funds (construction requires 20% matching funds). Provide a complete budget for additional movable equipment (equipment requires 20% matching funds). (narrative limited to 3 pages)

(Note: An Excel spreadsheet can be attached as long as the total submission for this Section is limited to 3 pages)

The facility will be utilized for several weeks throughout the calendar year in preparation for the techniques course. The primary cell culture laboratory for preparation for the course and when the course is in progress will be cell culture laboratory #3 (see floor plan). This laboratory will be dedicated for this purpose on the eight training course days to avoid impacting other investigator cell culture needs (cell culture laboratories #1 and #2 will be available for this purpose throughout the calendar year). The flow cytometry and molecular core laboratories will also be used prior to the course to assess the cells and for demonstrations during the course. The cryopreservation and cell storage area will be necessary to ensure that sufficient cells are prepared and cryopreserved in advance of use, and to demonstrate to the trainees techniques used for cell cryopreservation. Calendar sign-up will be used to reserve the equipment when needed. The irradiator will also be used to prepare the mouse feeders in sufficient quantity for the trainees to passage and grow, and use during the hands-on training with the human embryonic stem cells. Feeders will also require quality assurance testing in advance of the course to ensure they can support undifferentiated growth of the cells. Matching funds are included in this section as described, below.

The following costs are included in Section C.3. Budget Summary Table:

a. Construction Costs (total costs $485,000; institutional match $97,000)
• The modular facility which includes walls, doors, fire sprinkler system, cabinetry, workstations, laboratory benches, finishes, and other associated elements that facilitate the techniques course operation ($451,000).
• Security system used in support of the techniques course operation which will include door access and interior alarms ($10,000).
• Telephone and data systems used to support the techniques course for computer and internet access ($9,000).
• Miscellaneous costs associated with keying, construction inspection, material testing, reproduction, and insurance ($15,000).

b. Design Fees (total costs $19,000; institutional match $4,000)
• A&E design fees including design, drafting, working documentation, and implementation in support of the techniques course.

c. Administrative Costs (total costs $18,000; institutional match $4,000)
• Project administration includes project management, bid administration, contract administration, project accounting, and submittal review.

d. Construction Contingency (total contingency $50,000; institutional match $10,000)
• Approximately 8.5% of the total construction cost has been included as a contingency cost to provide for any unanticipated costs.

Two equipment items are included ($18,000; institutional match $3,600):

• One 4-foot Baker SterilGARD III biosafety cabinet - this will ensure that sufficient biosafety cabinets are available for trainees in the techniques course for the hands-on experiences, and that the trainees can participate side-by-side with faculty supervision maximizing time and efficiency in the training process. During the balance of the calendar year this biosafety cabinet will be used to prepare for the course, and will also be made available to investigators when course preparation or the course is not in progress. This biosafety cabinet will be located in cell culture laboratory #3 (see floor plan) ($9,000).
• Zeiss Axio Observer A1 kit inverted microscope - this additional microscope will also facilitate the training experiences by having a second microscope available during the trainees hands-on sessions in cell culture laboratory #3, and throughout the calendar year for any necessary or additional training experiences. Included is the cost for the extended warranty ($9,000).

Section C. 3. Budget Summary Table (if applicable)

Complete the budget summary for the use of CIRM funds.
Note: All colored fields contain calculated data. Please do not enter anything in those fields.

Other Project Costs				
Budget Category		**Total Budget**	**CIRM Grant Funds**	**Institutional Match**
Construction Contract Costs		$ 470,000	$ 376,000	$ 94,000
Other Construction Costs (institutional)		$ 15,000	$ 12,000	$ 3,000
Subtotal Construction		$ 485,000	$ 388,000	$ 97,000
Design Fees		$ 19,000	$ 15,000	$ 4,000
Administrative Costs		$ 18,000	$ 14,000	$ 4,000
Construction Contingency		$ 50,000	$ 40,000	$ 10,000
Total Construction		$ 572,000	$ 457,000	$ 115,000
Additional Movable Equipment		$ 18,000	$ 14,400	$ 3,600
Total Budget		$ 590,000	$ 471,400	$ 118,600
Gross Square Feet		$ 0.00	$ 0.00	Const Costs/GSF
Assignable Square Feet		$ 0.00	$ 0.00	Const Costs/ASF

Section D. Signature Page

Complete, save, and print Part Two of the Shared Research Laboratory Grant Information.

Submit electronic application as an email attachment to laboratory@cirm.ca.gov no later than 5:00pm PST on March 16, 2007.

Mail* the original executed Part Two application and five (5) copies to:

Shared Research Laboratory Grant Application
California Institute for Regenerative Medicine
210 King Street
San Francisco, CA 94107

***Mailing must be postmarked no later than March 16, 2007.**
Applications will not be accepted after these deadlines.

Project Start Date	Aug 1, 2007	Construction Start Date	Dec 13, 2007	Occupancy Date	Jul 24, 2008

Total Part Two Funds Requested for Shared Laboratory Space	$2,685,000
Total Part Two Funds Requested for Stem Cell Techniques Course	$ 590,000
Total Capital Funds Requested	$2,057,000

Facilities Contact

Mr. Mark S. Romney
Facilities Planner
UC Davis Health System
University of California, Davis
FSSB, 4800 2nd Avenue, Suite 3010
UC Davis Medical Center
Sacramento, CA 95817
(916) 734-6574
msromney@ucdmc.ucdavis.edu

Authorized Organizational Official	Date
Print Name	Title
Program Director	Date
Print Name	Title

(Revised 03/07/2007)

CIRM Shared Research Laboratory Information Form – Part Two Supplement

Project Information

Application Number: CL1-00504-1

Program Director Name:

Historical Performance

Provide information on past performance for 3 projects.

	Project 1	Project 2	Project 3
Brief Project Title	CNPRC Freezer Modular	Tupper Hall Lab Remodel	Briggs Hall Phase 3 Renov
Original Budget (Total project cost)	$ 465,211	$4,605,700	$1,722,000
Final project cost	$ 495,000	$4,486,980	$1,560,000
Scheduled Completion Date	Jun 29, 2006	Apr 4, 2006	Jun 30, 2006
Actual Notice of Completion Date	Jun 29, 2006	Aug 31, 2006	Oct 2, 2006
Gross Square Feet involved	1,680	11,143	5,359
Assignable Square Feet involved	1,680	10,160	3,376
Approximate number of change orders	6	8	13
Value of all change orders & claims	$ 30,000	$ 156,895	$ 28,617
Type of construction management	Design Build	Design-Bid-Build	Design-Bid-Build

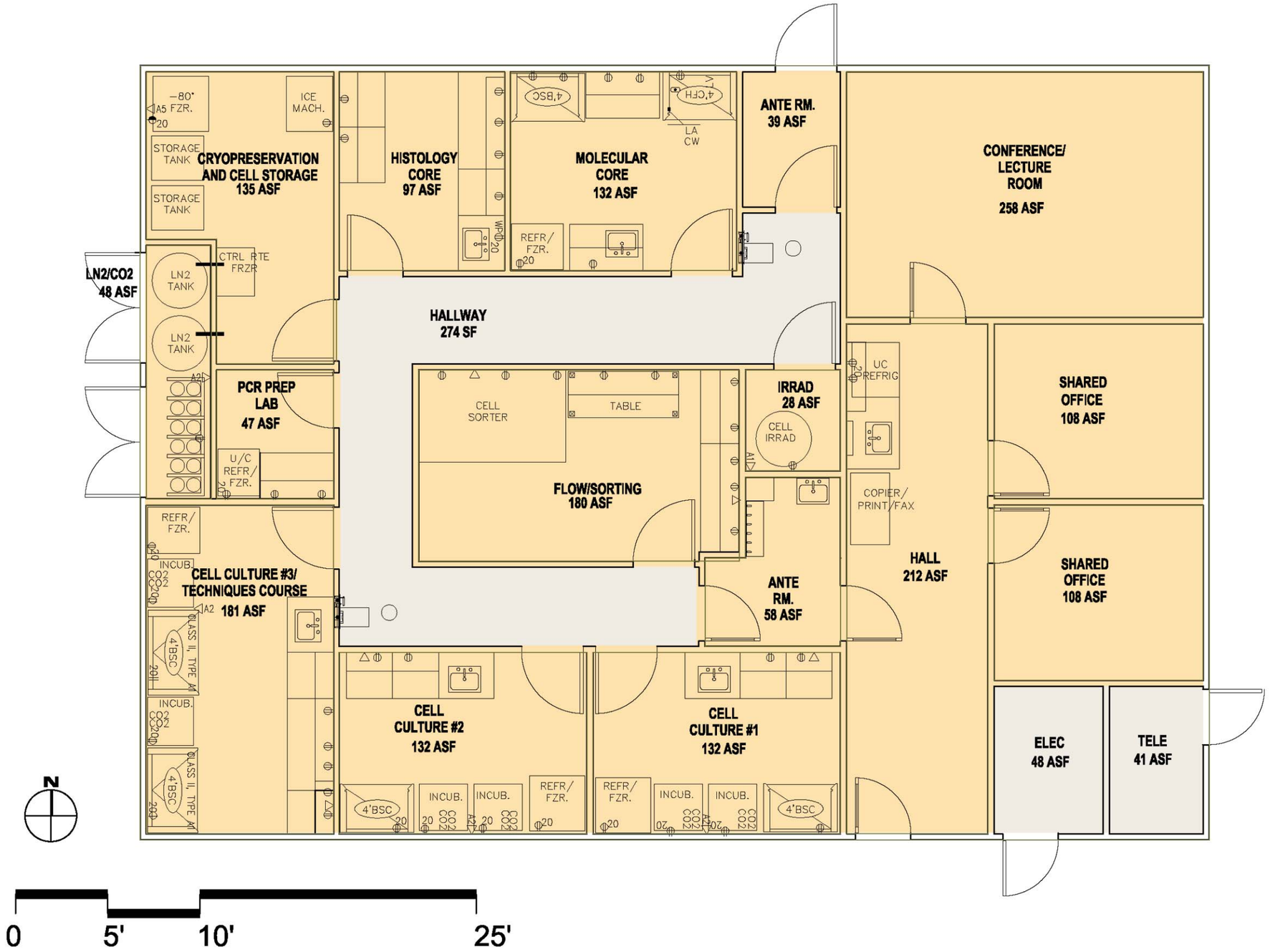
Laboratory Alteration Projects

Please enter the number of laboratory alteration projects completed by the applicant in the past 2 years (in the range of $1-5 million in project cost), and the approximate total dollar value that these projects represent.

Total Laboratory Alteration Projects: 6

Approximate Total Value: 16,843,000

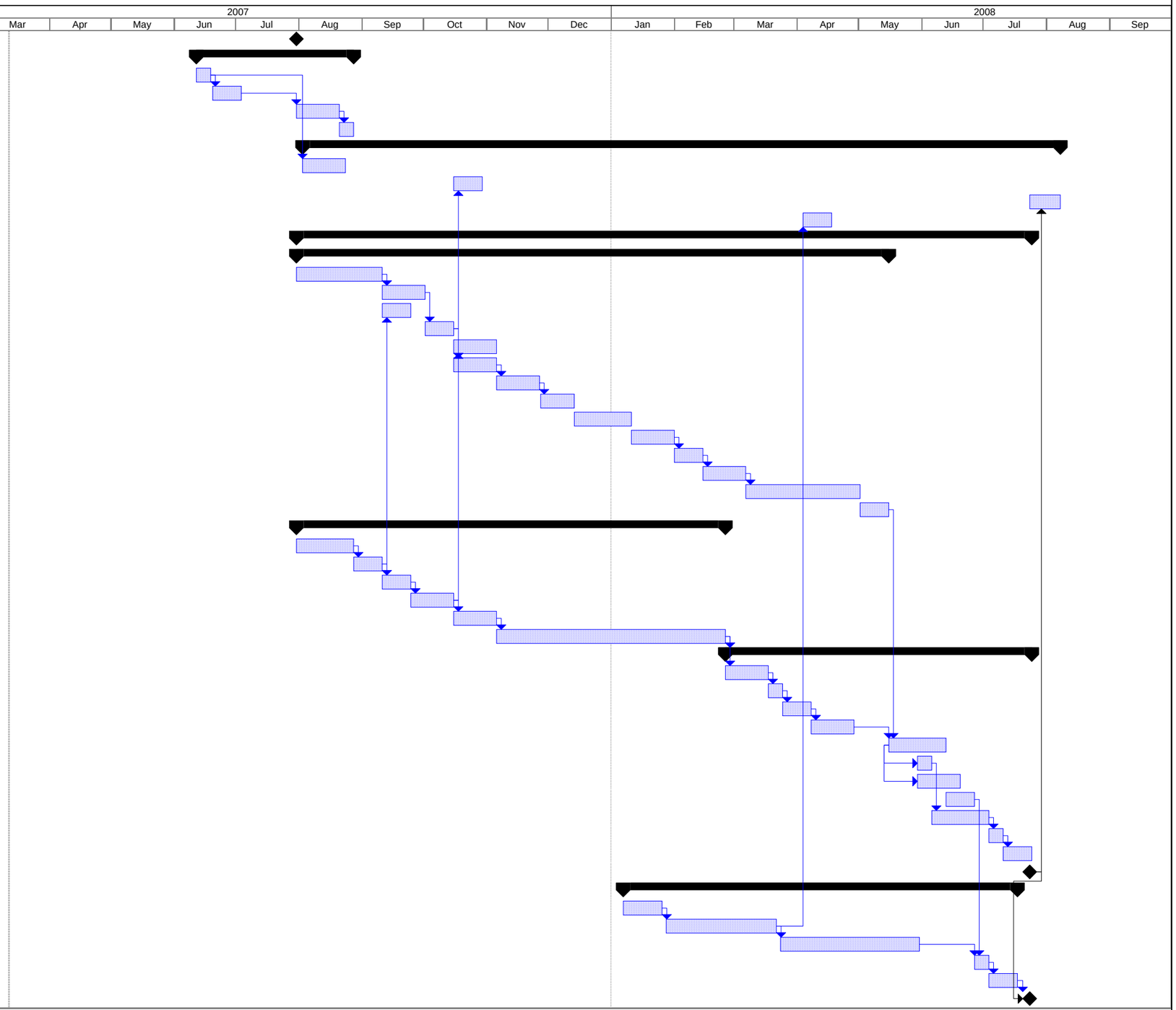
Limit Budget Justification to visible field area.



Proposed Floor Plan
Translational Human Embryonic Stem Cell Shared Research Facility
UNIVERSITY OF CALIFORNIA, DAVIS

CIRM Shared Research Laboratory Application Number CL1-00504-1
PART TWO
UC Davis Translational Human Embryonic Stem Cell Shared Research Facility

ID	Who	Task Name	Duration	Start	Finish
1	CIRM	**Notice of Award**	**0 days**	**Tue 7/31/07**	**Tue 7/31/07**
2		**University Funding**	**11 wks**	**Tue 6/12/07**	**Mon 8/27/07**
3	A&E	Prepare CIB (Capital Improvement Budget)	1 wk	Tue 6/12/07	Mon 6/18/07
4	ORMP/PI	Prepare PPG (Project Planning Guide)	2 wks	Wed 6/20/07	Tue 7/3/07
5	ORMP	Approve PPG	3 wks	Tue 7/31/07	Mon 8/20/07
6	ORMP	Funds Transfer to Capital Account	1 wk	Tue 8/21/07	Mon 8/27/07
7		**CIRM Funding**	**53 wks**	**Fri 8/3/07**	**Thu 8/7/08**
8	CIRM	Planning Funds (10%)	3 wks	Fri 8/3/07	Thu 8/23/07
9	CIRM	Construction Contract Funds (80%)	2 wks	Tue 10/16/07	Mon 10/29/07
10	CIRM	Construction Completion Funds (10%)	2.2 wks	Thu 7/24/08	Thu 8/7/08
11	CIRM	Equipment Purchase Funds	2 wks	Fri 4/4/08	Thu 4/17/08
12		**Facility Development**	**51.6 wks**	**Tue 7/31/07**	**Thu 7/24/08**
13		**Modular Facility Procurement**	**41.6 wks**	**Tue 7/31/07**	**Thu 5/15/08**
14	A&E	Draft Plans & Specifications	6 wks	Tue 7/31/07	Mon 9/10/07
15	CIRM	CIRM Approval of Preliminary Plans	3 wks	Tue 9/11/07	Mon 10/1/07
16	A&E	University Review of Plans	2 wks	Tue 9/11/07	Mon 9/24/07
17	A&E	Finalize Plans & Specifications	2 wks	Tue 10/2/07	Mon 10/15/07
18	A&E, FIRE & DSA	University & Outside Agency Reviews	3 wks	Tue 10/16/07	Mon 11/5/07
19	CIRM	CIRM Approval of Working Drawings	3 wks	Tue 10/16/07	Mon 11/5/07
20	PURCHASING	Advertisement	3 wks	Tue 11/6/07	Mon 11/26/07
21	PURCHASING	Award	2.5 wks	Tue 11/27/07	Thu 12/13/07
22	VENDOR	Vendor Prepare Shop Drawings	4 wks	Fri 12/14/07	Thu 1/10/08
23	A&E	University Review of Shop Drawings	3 wks	Fri 1/11/08	Thu 1/31/08
24	VENDOR	Shop Drawings Revision	2 wks	Fri 2/1/08	Thu 2/14/08
25	A&E	University Approval of Shop Drawings	3 wks	Fri 2/15/08	Thu 3/6/08
26	VENDOR	Fabrication	8 wks	Fri 3/7/08	Thu 5/1/08
27	VENDOR	Delivery	2 wks	Fri 5/2/08	Thu 5/15/08
28		**Foundation & Site work Design/Bid/Award**	**30 wks**	**Tue 7/31/07**	**Mon 2/25/08**
29	A&E	Select & Award Engineering Contract	4 wks	Tue 7/31/07	Mon 8/27/07
30	ENGINEER	Preliminary Drawings & Specifications	2 wks	Tue 8/28/07	Mon 9/10/07
31	A&E	Round Table Review	2 wks	Tue 9/11/07	Mon 9/24/07
32	ENGINEER	Construction Documents	3 wks	Tue 9/25/07	Mon 10/15/07
33	A&E	Review & Approval	3 wks	Tue 10/16/07	Mon 11/5/07
34	A&E	Bid & Award	16 wks	Tue 11/6/07	Mon 2/25/08
35		**Site Construction**	**21.6 wks**	**Tue 2/26/08**	**Thu 7/24/08**
36	CONTRACTOR	Contractor mobilization	3 wks	Tue 2/26/08	Mon 3/17/08
37	CONTRACTOR	Site Clearance & Grading	1 wk	Tue 3/18/08	Mon 3/24/08
38	CONTRACTOR	Utility Rough in	2 wks	Tue 3/25/08	Mon 4/7/08
39	CONTRACTOR	Foundation	3 wks	Tue 4/8/08	Mon 4/28/08
40	VENDOR	Assembly	4 wks	Fri 5/16/08	Thu 6/12/08
41	CONTRACTOR	Utility Connection	1 wk	Fri 5/30/08	Thu 6/5/08
42	CONTRACTOR	Site Work (Paving & Lighting)	3 wks	Fri 5/30/08	Thu 6/19/08
43	SEP. CONTRACTS	Finishing	2 wks	Fri 6/13/08	Thu 6/26/08
44	VENDOR	Commissioning	4 wks	Fri 6/6/08	Thu 7/3/08
45	A&E	Final Inspection	1 wk	Fri 7/4/08	Thu 7/10/08
46	A&E/GC/VEND	Punch list for Certificate of Occupancy	2 wks	Fri 7/11/08	Thu 7/24/08
47	A&E/FD	**Certificate of Occupancy**	**0 days**	**Thu 7/24/08**	**Thu 7/24/08**
48		**Equipment**	**27.8 wks**	**Mon 1/7/08**	**Thu 7/17/08**
49	P.I.	Specifications	3 wks	Mon 1/7/08	Fri 1/25/08
50	PURCHASING	Procurement	8 wks	Mon 1/28/08	Fri 3/21/08
51	VENDOR	Delivery	10 wks	Mon 3/24/08	Fri 5/30/08
52	A&E	Installation	1 wk	Fri 6/27/08	Thu 7/3/08
53	VENDOR	Calibration/Certification	2 wks	Fri 7/4/08	Thu 7/17/08
54	MOVE CREW	**Move-in**	**0 days**	**Thu 7/24/08**	**Thu 7/24/08**



Mon 3/12/07

Task | Milestone | Rolled Up Task | Rolled Up Progress | External Tasks | Group By Summary
Progress | Summary | Rolled Up Milestone | Split | Project Summary

CIRM Shared Research Laboratory Application Number CL1-00504-1

PART TWO

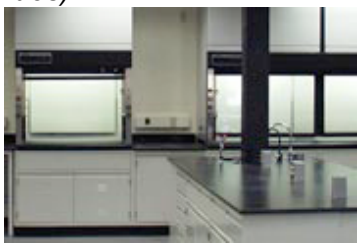
UC Davis Translational Human Embryonic Stem Cell Shared Research Facility

Program Director: Alice F. Tarantal, PhD

Attachments

- Letter from Dr. Barry Klein, Vice Chancellor for Research
- Proposed floor plan

(examples of modular capabilities)


- Proposed timeline

CALIFORNIA INSTITUTE FOR REGENERATIVE MEDICINE

Appendix A

Application: CL1-00504-1

Title: UC Davis Translational Human Embryonic Stem Cell Shared Research Facility

Public Abstract:

The intent of the proposed shared research facility is to provide a state-wide resource for qualified scientists in California to study human embryonic stem cells (hESC) without federal restrictions. The shared facility will encourage a spirit of collaboration and include laboratories for investigators to culture, collect, store, and analyze hESC, provide necessary services that will be cost-effective and assist with research productivity, and ensure an environment that will facilitate the essential interactions among scientists. This approach will advance the use of hESC for regenerative medicine purposes and aid in developing new technologies and therapies for the treatment of human disease. Using established methods that have proven successful for other collaborative and service-based structures, this facility will encourage scientists to work together and provide the necessary resources to ensure their success. Investigators new to hESC research will benefit greatly by having this facility available because it will have a centralized supportive structure where experienced personnel will provide the necessary assistance and guidance. For those investigators with hESC research experience, new opportunities will be available to work with cell lines that can be obtained but not be used in laboratories that are supported by federal funding. This will greatly expand research programs that are focused, for example, on studying ways to differentiate hESC towards blood cells and vessels for the treatment of disorders such as sickle cell disease and vascular abnormalities associated with heart disease. In addition, regeneration of damaged organs such as the heart, lung, liver, or kidney may require methods to reconstruct these tissues using scaffolds on which to grow the cells. These approaches require the ideas of cell biologists, engineers, biomedical researchers, and clinicians working together, and testing these ideas to ensure the procedures are safe before considering treatments of human patients. Techniques such as those that focus on ways to monitor cells once they are injected into the body will provide a powerful tool to study the outcome of these therapies.

A techniques course will be offered to scientists, students, and staff which will result in more laboratories in California working with hESC. The cells are difficult to grow and specialized training is required by personnel that are highly skilled and can provide the necessary information and direction to ensure success. The course is designed to provide qualified applicants the training experiences that will reinforce the basics, and ensure they are able to establish these techniques in their laboratories. The training course will be offered 4 times during the calendar year and include presentations and 'hands-on' experiences. Continuing education through the facility will ensure trainees have the necessary support when they return to their respective laboratories.

Statement of Benefit to California:

The Translational Human Embryonic Stem Cell Shared Research Facility will serve the state and its citizens by providing unparalleled opportunities to investigators, and establish a model for the manner in which researchers throughout California can work together to advance the use of cellular therapies for the treatment of human disease. This facility will remove barriers preventing the transfer of promising stem cell therapies to human patients by connecting people with expertise and new ideas with the resources necessary to develop and to evaluate new technologies and therapies under the necessary conditions before they are assessed in humans. The California community will benefit from the results of this collaborative environment because it will facilitate and advance research findings, promote a culture of sharing, and educate and train a new generation of scientists in human embryonic stem cell research. This approach, the infrastructure and goals of the proposed facility, and the plans for the techniques course will all provide opportunities for scientists, students, fellows, and staff, and increase the number of qualified scientific and medical personnel that will be able to make new discoveries and ultimately improve health care for patients.